

## WEBINAR INVITATION

### **Pre-Cooling Strategies to Reduce Peak Demand A Case Study with Large Commercial Office Buildings**

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Commercial building HVAC systems contribute significantly to summer peak electrical load. In California this amounts to about 14 GW or 30% of the states summer peak.

Four years of research by the Demand Response Research Center (DRRC), Lawrence Berkeley National Lab (Berkeley Lab), the University of California Center for the Built Environment (CBE), and Purdue University have shown that

**“Pre-cooling buildings at night and early morning hours can reduce HVAC load during system peak hours, producing a significant reduction in peak load and a reduction in overall energy usage.”**

Field research is demonstrating that the structural mass within existing commercial buildings can be used to reduce electrical peak demand without compromising thermal comfort. Field tests in typical office buildings on hot summer days produced very positive results. Pre-cooling strategies that lower building temperatures in the early morning non-peak hours a few degrees below the normal setpoint, followed by an increase the temperature slightly above the normal setpoint during peak afternoon hours have been shown to reduce peak demand by 20-30%.

The capacity, energy and comfort measurement results from these studies have been very positive. The cooled mass and higher on-peak zone temperatures lead to reduced on-peak cooling loads for the HVAC equipment, which results in lower on-peak energy and demand charges. Depending on the building, climate, and length of the demand-limiting period, the peak electrical power associated with air conditioning can be reduced in the range of about 1 to 2 W/ft<sup>2</sup> through adjustment of zone temperature between 70°F and 78°F. Innovative customer comfort studies have also shown that pre-cooling positive customer impacts.

The potential for utilizing building thermal mass for load shifting and peak demand reduction has been demonstrated in a number of simulation, laboratory, and field studies with Pacific Gas & Electric Company, Southern California Edison and the Sacramento Municipal Utility District.

LBNL and Purdue University are developing quick assessment simulation tools to evaluate demand reduction, operating cost savings, and occupant thermal comfort impacts associated with pre-cooling strategies. Separate tools are being developed for small commercial and large commercial buildings.

This Webinar will examine results of these field tests and describe the quick assessment tools under development.

Join in on this Webinar. We are encouraging feedback from building owners, engineers, utilities, and energy auditors to help refine the development of the quick assessment tools and guide our continuing research.

**What:** *Webinar: Demand Peak Demand Reduction with Building Thermal Mass – Field tests and Tools*

**When:** Monday, March 26, 2007, 1:00 p.m. - 2:30 p.m. (Pacific)

**Cost:** Free

**Speakers:**

**Peng Xu**, Mechanical Engineer  
*Lawrence Berkeley National Laboratory.*

**James Braun**, Professor  
Purdue University

**Ed Arens**, Professor  
Center for Built Environment  
University of California, Berkeley

**Moderator:**

**Nance Matson**  
PIER Demand Response Research Center (DRRC)

**For more information:**

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